IN THE SPECIFICATION

Please amend the last paragraph portion on page 5 under the heading Brief Description of the Drawings as follows:

FIG. 5 is a flow diagram of the operation of the soft-reference magnetic memory digitizing device shown in the above figures~~.~~;

FIG. 6 is a perspective view of a portion of the soft-reference magnetic memory digitizing device shown in FIG. 3.

Please amend the paragraph bridging from the bottom of page 7 to the top of page 8 as follows:

As shown, MTJ cell **104** has at least one ferromagnetic sense layer **202**, an intermediate layer **204**, and at least one soft-reference layer **206**. The ferromagnetic sense layer **202** is characterized by an alterable orientation of magnetization M2. As stated above, in the initial state M2 is oriented to the right, as is the condition of MTJ cells **104'** and **104"**. The orientation of magnetization M2 is changed upon the substantially proximate application of at least one externally-applied magnetic field **212**. More specifically, as shown the stylus **110** provides a magnetic field **212** that for the portion imposed upon MTJ cell **104** is oriented to the left. As implied by FIGs. 2A and 2B showing first the proximate application of magnetic field **212** to MTJ cell **104** to change M2 to left orientation (FIG. 2A), and the subsequent removal of magnetic field **212** from MTJ cell **104** which remains with M2 having a left orientation, it is understood and appreciated that the magnetic field **212** provided by stylus **110** is sufficient to overcome the coercivity of sense layer **202**, and thus change the orientation of M2 from right to left. More simply stated, the sense layer "senses" the presence of an external magnetic field **212** and can reorient itself accordingly. The intermediate layer **204** has opposing sides such that the sense layer **202** in contact with one side is in vertical alignment with, and substantially uniformly spaced from, the soft-reference layer, in contact with the second side of the intermediate layer **204**.

Please amend the first full paragraph on page 8 as follows:

The soft-reference layer **206** is so named because the direction of orientation of magnetization M1 can be dynamically set to a known direction. Unlike a typical reference layer which are hard-pinned in a selected orientation, the soft-reference layer **206** is unpinned. In the presence of magnetic fields the soft-reference layer **206** will achieve an orientation, however such orientation is dynamic. Magnetic field **212** may cause a temporary alignment of soft-reference layer **206** as the magnetic field **212** orients M1 of the sense layer, however the temporary orientation of M1 is of substantially no consequence as the orientation of M1 is not permanent. The orientation of the soft-reference layer **206**, i.e., M1, is truly only at issue when it is dynamically set during a read operation, further discussed below. Such dynamic setting during a read operation may be achieved by magnetic fields provided by an externally supplied current flowing through the row **208** and column **210** intersecting at MTJ cell **104**. More specifically, the current flowing through row **208** produces a first magnetic field, and the current flowing through column **210** produces a second magnetic field. The two fields are orthogonal and substantially combine at their cross point intersection and are sufficient to orient the soft-reference layer **206**.

Please amend the second full paragraph on page 8 as follows:

As the MTJ cells **104** are located at cross point intersections such a system permits the individual selection of a given MTJ cell **104**. In this case, the current magnitude applied to the row **208** and the column **210** to set the magnetization M1 of the soft reference layer **206** to a known direction is relatively small. This current will not alter the magnetization state M2 of the sense layer **202** or other unselected memory cells, which at most are subjected to half the combined field. In the absence of this current applied to the row **208** and column **210** the orientation of M1 is affectively released. As the current flowing through row **208** and column **210** in a read cycle provided combining fields sufficient to align M1 (the soft-reference layer **206**) without altering M2 (the sense layer **202**), they are understood and appreciated to be low read fields.

Please amend the last paragraph on page 8 continuing to page 9 as follows:

The comparison of M1 and M2 is achieved by measuring resistance in the MTJ cell **104**. As current is flowing through row **208** and column **210** to dynamically align soft-reference layer **206**, current is also being provided to flow through MTJ cell **104**. If the orientation of M2 of the sense layer **202** is parallel to the dynamic orientation of M1 of the soft-reference layer **206** the MTJ cell **104** will be in a state of low resistance. If the orientation of M2 of the sense layer **202** is anti-parallel to the dynamic orientation of M1 of the soft-reference layer **206** the MTJ cell **104** will be in a state of high resistance. A convention is generally adopted to indicate that high resistance is a logical "1" and low resistance is a logical "0", or vis-a-versa. The phenomenon that causes the resistance in the MTJ cell **104** is well understood in the magnetic memory art and is well understood for TMR memory cells. GMR and CMR memory cells have similar magnetic behavior but their magneto-resistance arises from different physical effects as the electrical conduction mechanisms are different. For instance, in a TMR-based memory cell, the phenomenon is referred to as quantum-mechanical tunneling or spin-dependent tunneling. In a TMR memory cell, the intermediate layer **204** is a thin barrier of dielectric material through which electrons quantum mechanically tunnel between the sense layer **202** and the soft-reference layer **206.**

Please amend the second full paragraph on page 9 as follows:

In at least one embodiment, the ferromagnetic sense layer **202** has a ~~lower~~ coercitivity higher than the soft-reference layer **206**, and may be made from a material that includes, but it not limited to: Nickel Iron (NiFe), Nickel Iron Cobalt (NiFeCo), Cobalt Iron (CoFe), and alloys of such metals. In addition, both the soft-reference layer **206** and the sense layer **202** may be formed from multiple layers of materials. However, for conceptual simplicity and ease of discussion, each layer component is herein discussed as a single layer.

Please amend the last paragraph on page 10, continuing on the top of page 11, as follows:

As stated above, control logic **108** within the display directs operations such as read array (a reading state) and initialize array (a refreshing state). These tasks are performed with supporting drive electronics within the digitizer that are well known to those skilled in the art. Movement of the stylus **110** proximate to a MTJ cell **104** causes the sense layer **202** to switch orientation from it's initialized position, i.e., from M2 oriented to the right to M2 oriented to the left as described above. To register this switch, in at least one embodiment the control logic **108** operates in cycles. In a first cycle, a low read current is systematically directed to each MTJ cell **104** in the array **102** by systematic row **208** and column **210** selection, and the detected resistance noted. In a second cycle, a higher initialize current is directed to each cell by rows **208** and columns **210**, thus providing higher fields which when combined are sufficient to overcome the coercivity of each sense layer **202** so as to re-set the orientation M2 of any and all sense layers **202** that may have been reoriented. As the reading state involves low read currents providing low read fields, the orientation of each sense layer **202** is unaffected during the reading cycle or state. As the initialize operation is applied to all MTJ cells **104** in the array **102**, it may be applied substantially simultaneously to all MTJ cells **104** without specific row **208** and column **210** addressing. As described above, the orientation of each soft-reference layer **206** is dynamic. The temporary alignment of M1 that may occur during the refreshing of the sense layers **202** is of no more consequence then the temporary alignment of M1 that may occur in the presence of the magnetic field provided by the external stylus. Again, the orientation of each soft-reference layer **206** is dynamically set during each read cycle by providing low read fields as described above. To insure a high probability of detecting the presence and position of the stylus, the cycle time is about 0.1 to 5 milliseconds. Moreover, the cycle time is set to be faster than a user is likely to move the stylus **110**.

Please amend the last full paragraph on page 11; as follows:

As shown in FIG. 3, in at least one embodiment, a display **300** is at least partly integrated with the array **102** of MTJ cells **104**. The display **300** is characterized by an array of pixels **302**. In such a setting, each MTJ cell **202** is further coupled to at least one pixel **302**, such that the MTJ cells **104** of the digitizer **100** actively controls the pixels **302** of the display **300**, thus providing a touch-screen. <u>FIG. 6 provides a partial perspective view of magnetic memory digitizing device **100** incorporating a display **300** above the array **102** of MTJ cells **104**. Display **300** includes an array of pixels **600**, of which pixel **302**, **302'**, **302"**... **302^n** are exemplary. As shown, both the display **300** and the array **102** of MTJ cells **104** are below the outer surface **200**. In at least one embodiment, the outer surface of the display may be outer surface **200**. It is understood and appreciated that display panels such as display **300** provide visual information in the form of text, shapes, images or the like. Fundamentally, such information is composed of pixels, the smallest complete component of the image. As one or more MTJ cells **104** of the array **102** activate their associated pixels **302**, visual information is created and perceived by the user. As pixel **302** is above MTJ cell **104**, when activated by the sense layer of MTJ cell **104** being reoriented, the illumination of pixel **302**, and thus it's component of visual information, is displayed upon the display **300** proximate to the sense layer **202** of MTJ cell **104**.</u> Display panels used in such touch screen applications typically employ~~s~~ transistors in an active matrix, and are well known to those skilled in the art. Here, the MTJ cells **104** of the array **102** are mated to the array of transistors in at least a one-to-one relationship <u>as is further shown in FIG. 4</u>. The condition of the sense layer **201** in each MTJ cell **202** is thereby used to control the pixels **302** of the display **300**.

<u>IN THE DRAWINGS</u>

The attached sheets of drawings include changes to FIG. 3 and a new drawing (FIG. 6) as requested by the Examiner. These sheets replace the original sheets including FIGs. 1-5.